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UTC Power

A United Technologies Company

**Testimony of UTC Power
Regarding**

**Senate Bill No. 1
AN ACT CONCERNING CONNECTICUT'S ENERGY FUTURE**

**Before the Energy and Technology Committee
March 15, 2011**

Good afternoon Senator Fonfara, Representative Nardello and members of the Committee. I am Mike Brown, Vice President, Legal and Government Affairs at UTC Power. UTC Power appreciates the opportunity to convey its support for ***Senate Bill No. 1, An Act Concerning Connecticut's Energy Future.***

UTC Power Corporation, a United Technologies company located in South Windsor, employs over 500 people in the development, design, production and service of fuel cells for use in stationary, transportation, space and defense applications. UTC Power recommends further enhancements to the Senate Bill No. 1, "An Act Concerning Connecticut's Energy Future" to ensure that a comprehensive statewide energy policy is truly achieved.

UTC Power has been in the fuel cell industry for over 50 years and without the fuel cells produced in South Windsor, man never would have set foot on the moon. Today we are producing fuel cells for stationary applications that fulfill the promise for energy generation with system efficiencies approaching 90%, no combustion, no noise, no green house gas emissions and a significantly reduced carbon foot-print from the same amount of energy input, compared to traditional power generation devices, through the use of combined heat and power. We also provide fuel cells and fuel cell technology for transportation applications, from working with various automotive manufacturers on fuel cell technology for light duty vehicles, to underwater vehicles, to the Space Shuttle, to the five fuel cell powered transit buses deployed through CT Transit in Hartford.

We support the establishment of a Department of Energy and Environmental Protection as a first step in the creation of a comprehensive and coordinated statewide energy policy. The merger of the Department of Environmental Protection and the Department of Public Utility Control will create organizational efficiencies that streamline administration and program management, while also creating direct lines of communication between overlapping and complementary functions which will ensure consistency in Connecticut energy policy and implementation.

To deliver on the intention of a comprehensive state energy policy, Connecticut must continue to support its areas of core competence. In the clean energy arena, fuel cells represent one of the State's greatest successes. The fuel cell industry has established a manufacturing center in Connecticut, creating thousands of green jobs that exist today and supplying product to both Connecticut ratepayers, as well as a global marketplace. The fuel cell industry today represents over 1,000 direct jobs and over 1,000 additional indirect and induced jobs in the State of Connecticut, including manufacturing and technology fields.

Rather than legislate energy generation by a specific resource, SB 1 should provide the marketplace the opportunity to evaluate which resource creates the greatest efficiencies, economic value and environmental benefits. Consideration must be given to all Class 1 renewable energy sources. Section 57 lays out a plan that would result in the majority of Connecticut renewable energy investment made in just one Class 1 renewable energy source - solar technology.

Having established the eligibility of other technologies as Class 1 renewable, and undertaken a comprehensive analysis of their benefits, Connecticut has already taken a giant step towards a broader energy portfolio and now risks losing this momentum. To further economic development objectives, an emphasis should be placed on those Class 1 energy sources manufactured here in Connecticut. It is sound policy to continue previously successful programs and investments, rather than change focus and emphasis. There is no one solution to the environmental and economic costs of energy generation, and a focus on just one technology will likely result in higher costs without significant environmental benefits. Any reference to "renewable" in the bill should be defined as Class 1 renewable energy sources, consistent with existing energy legislation.

While SB 1 requires a determination of "least cost alternatives" (Section 49), it is not driven by market forces, but supplies mandates for solar by providing significant incentives for that specific Class 1 renewable technology – and no others. In evaluating methods to reduce the total energy cost for the state, consideration must be given to the capacity of any technology to provide clean energy 24 hours a day, 365 days a year. Attachment 1 shows the cost of generation of solar, wind and fuel cells and demonstrates that a higher capacity is a key determinant of reducing cost of generation.

SB 1 also portends that solar is the most economic and technically viable energy solution for residential ratepayers of Connecticut. This misses 2 key elements: 1) non-residential buildings and industry consume 61% of electrical energy in the United States and, 2) these buildings are responsible for 62% of carbon emissions associated with electric generation. A singular focus on residential generation limits the potential benefits of SB 1 and squanders this tremendous opportunity for a comprehensive statewide energy policy and overall improvement to Connecticut's environment. Through a broader program that goes beyond residential, and includes commercial buildings as well as Class 1 renewable sources, ratepayers would receive the maximum economic and environmental benefit possible.

The language in Section 51 should not exclude mixed-use buildings that have multifamily residential dwellings co-located with commercial and retail space. Additionally, Section 49 should provide for creative solutions (such as submetering) if such solutions would improve the deployment of distributed generation combined heat and power (CHP) using Class 1 renewable energy sources. Section 51 should provide virtual net metering for municipalities establishing a sustainable energy program pursuant to this section, allowing the aggregation of meters for municipalities with multiple sites of smaller electricity demand and consumption, particularly in the case of CHP applications where thermal and electrical demand may be at different locations.

Additionally, the combination of Sections 61 and Sections 89 of the bill would provide broader impact. Production-based payments should not be limited to solar, but should extend to all Class 1 Renewable energy sources. Finally, the cap established pursuant to Section 56 should apply to tariffs established for solar as well to protect ratepayer interests.

Thank you for the opportunity to express our desire for SB 1 to meet the State's objective of the cleanest and most cost effective energy policy possible, and to provide comments as to how the intent of SB 1 could facilitate additional positive economic impacts and job creation and retention in the State of Connecticut. We would be pleased to provide any information to the Committee and the staff in support of the consideration of this bill.

Leading the Way to Energy Independence.

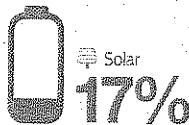
Alternative energy systems go head to head.

The following infographic illustrates how three leading alternative energy systems rate in critical areas commonly looked at when evaluating energy options. All three systems are vital components of the energy independence roadmap – see for yourself how they compare.



CAPACITY FACTOR

Annual output provided by the rated AC output for 1000 hours. Solar wind assumes northeast U.S.



PRODUCT LIFESPAN VS. PAYOFF

LIFESPAN

20 YEARS

PAYBACK

7.4 YEARS



17.4 years with 50% net use, 37 years with no net use.

25 YEARS

36.5 YEARS



20 YEARS

8.0 YEARS

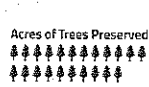
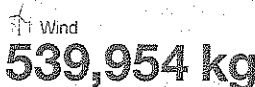
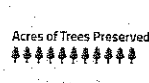
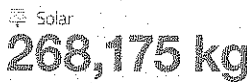


Data based on product life and simple payback and assumes zero incentive financing.



ANNUAL CO₂ REDUCTION

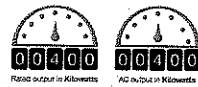
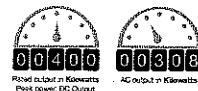
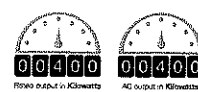
Carbon dioxide (CO₂) saved annually, measured in kilograms, when compared to typical coal-fired generator.



1 = 250k Acres



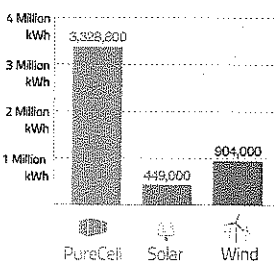
RATED & AC OUTPUT



Data based on function of capacity factor and AC output normalized to 400 kW.



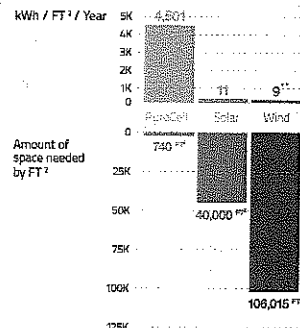
ANNUAL AC ENERGY



Data based on function of capacity factor and AC output normalized to 400 kW.



ENERGY DENSITY



11.6 kWh/AC/yr based on electricity rate of \$0.09/kWh.

Infographic updated February 2011

Sources:

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